CLAIMS:

1. A magnetic resonance imaging (MRI) apparatus comprising a main magnet system for generating a main magnetic field in an examination space, a gradient coil system which is substantially situated between the main magnet system and the examination space and which is provided with sub-gradient coils and a binding material having a glass temperature for keeping the sub-gradient coils together, control means for controlling the temperature of the gradient coil system, and temperature-influencing means for influencing, on the basis of control signals originating from the control means, the temperature of the gradient coil system, characterized in that the control means are arranged for controlling, during operation of the MRI apparatus, the temperature of the binding material of the gradient coil system to a value above the glass temperature.

2. An MRI apparatus as claimed in claim 1, characterized in that the value of the glass temperature is at least 30 °C.

3. An MRI apparatus as claimed in claim 1 or 2, characterized in that the temperature-influencing means comprise heating means for the gradient coil system.

4. An MRI apparatus as claimed in claim 1, 2 or 3, characterized in that the temperature-influencing means and the control means are arranged so as to be able to influence, to a different degree, the temperature of respective, different parts of the gradient coil system.

5. An MRI apparatus as claimed in claim 1, 2, 3 or 4, characterized in that the temperature-influencing means comprise a fluid circuit which extends through the gradient coil system to exchange energy between the fluid in the circuit and the binder material of the gradient coil system.

6. An MRI apparatus as claimed in claim 5, characterized in that the fluid circuit comprises two separate circuit parts.

7. An MRI apparatus as claimed in claim 6, characterized in that the separate circuit parts meet in a joint circuit part upstream of the gradient coil system via a controllable mixing valve, the position of the mixing valve being dependent on control signals from the control means.

8. An MRI apparatus as claimed in claim 6, characterized in that the separate circuit parts extend through different parts of the gradient coil system.

9. An MRI apparatus as claimed in claim 8, characterized in that one of the two circuit parts is provided primarily to influence the temperature of one or a number of sub-gradient coils, while the other of the two circuit parts is provided primarily to influence the temperature of the binding agent.

10. An MRI apparatus as claimed in any one of claims 6 through 9, characterized in that the temperature-influencing means and the control means are arranged for controlling the capacity of the separate circuit parts independently of one another.

11. An MRI apparatus as claimed in any one of the preceding claims, characterized in that the control means are arranged for controlling, on the basis of data regarding the necessary energy consumption by the gradient coil system for an image yet to be made by the MRI apparatus, the operation of the temperature-influencing means before or during the production of this image.

12. An MRI apparatus as claimed in any one of claims 3 through 11, characterized in that the heating means comprise electrical resistance wires in the binder material.

13. A method of operating a magnetic resistance imaging (MRI) apparatus comprising a main magnet system for generating a main magnetic field in an examination space, a gradient coil system which is situated basically between the main magnet system and the examination space and which is provided with sub-gradient coils and a binder material with a glass temperature for keeping the sub-gradient coils together, control means for controlling the temperature of the gradient coil system and temperature-influencing means for influencing the temperature of the gradient coil system on the basis of control signals

originating from the control means, characterized in that, during operation of the MRI apparatus, the control means control the temperature of the binder material of the gradient coil system to a value above the glass temperature.